DETERMINANTS OF DE NOVO ENTRY IN BANKING

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Abstract

The increase in both the number of bank (and thrift) mergers and the number of de novo entries has led the press to speculate that these are interrelated. Specifically, the media have suggested that out-of-market acquisitions cause de novo entry. This paper examines the determinants of de novo entry at the individual market level and specifically tests the hypothesis that "out-of market acquisitions lead to de novo entry into that market." This study differs from the earlier literature on the determinants of de novo entry in several respects: (1) Banks and thrifts are treated as full competitors and included in the empirical work. (2) The time frame examined is 1995–97, a period of record earnings for banks and thrifts. (3) The data for new charters have been scrubbed so that only "true" de novo entrants are included in the empirical work. A theoretical framework for de novo entry is developed, and logit analysis is applied to all MSAs for the three-year period. Tests have also been performed to see whether differences in chartering philosophy between federal and state regulators influenced de novo entry decisions.

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Introduction

During the 1980s and early 1990s the financial services industry underwent a major restructuring. With the steady rise in bank and thrift failures, the annual number of new bank and thrift charters declined steadily, going from a peak of 415 in 1984 to a low of 40 in 1992. During the past several years, however, new charters for banks and thrifts have risen significantly; 449 banks and thrifts, with initial quarter-end assets of $30 billion, were chartered over the past three years. This dramatic increase in new charters has occurred during a period when there has been considerable consolidation in the banking industry. With the enactment in 1994 of the Riegle-Neal Interstate Banking and Branching Efficiency Act, the barriers to interstate banking all but disappeared. This has given rise to a spate of acquisitions by large regional banking organizations of banks in states other than those where the acquirers were based.

The confluence of the increase in the aggregate number of de novo banks and the merger wave sweeping the financial services sector has given rise to speculation in the popular press that the two trends are related. Some commentators have speculated that borrower hostility toward large out-of-market acquirers has led to the creation of new banks, while others have attributed the trend to a surplus of executives who have been displaced by cost cutting resulting from merger transactions. (Examples of the latter type of press are Zellner [1998], Murray [1998], and Gillan [1998].) While these arguments may be intuitively appealing, they are not based on rigorous analysis, nor are they market

specific. A more fully specified model of entry must be developed to test for the effect of merger activity on entry behavior.

Prior studies have looked at de novo banks from various perspectives. In the early 1970s several empirical studies examined de novo entry from the perspective of the issues surrounding merger analysis and bank holding company expansion (and specifically looked at the likelihood of potential competition).[1] Other studies, such as those by DeYoung and Hasan (1997, 1998), Hunter and Srinivasan (1990), McCall and Peterson (1977), and Rose and Savage (1983), have focused on the performance of de novo banks.[2] Recently researchers have looked at specific credit allocation issues (e.g., small business lending) as they relate to de novo banks.[3]

This study of the determinants of de novo entry differs from previous ones in several key respects. First, since the competitive overlap between commercial banks and thrift institutions has grown to the point that they are effective competitors in local markets, entry by both banks and savings and loan associations is included. Second, the period from 1995 through 1997 is selected for study since it covers a time frame after the bank and thrift crises—a period in which banks and thrifts enjoyed record earnings. Third, while other researchers have used the number of newly chartered banks as a measure of the number of de novo institutions, a close examination of the data indicates this is not appropriate. A number of newly chartered institutions are special-purpose affiliates of existing institutions. Specifically, a large number are credit-card banks or finance company operations. In addition, some of the newly chartered institutions were

[1] See, for example, Gilbert (1974) and Hanweck (1971).
[2] Similar studies of the performance of de novo savings and loans were done by Hunter, Verbrugge, and Whidbee (1996) and Lindley, Verbrugge, McNulty, and Gup (1992).
[3] Examples of this literature are Goldberg and White (1997) and DeYoung, Goldberg, and White (1999).

created by existing institutions to purchase branches of failed savings and loans from the Resolution Trust Corporation or from other banking organizations. Hence, the de novo entry data used in this analysis separate data on true de novo entry from other structure data. Last, this study specifically tests the hypothesis that merger activity encourages de novo entry. It also examines whether there has been a significant difference in the determinants of entry between federally chartered banks and thrifts and state-chartered institutions during the mid-1990s.

The next section examines recent trends in de novo expansion. The subsequent section reviews the prior literature on the determinants of de novo entry in banking. Then come two sections presenting (1) the basic model that serves as the framework for the empirical work and (2) the results and the empirical techniques used. Conclusions are presented in the last section.

Recent Trends in Bank and Thrift De Novo Expansion

In the early 1980s new entrants into the bank and thrift industries encountered markets undergoing rapid change. As the conditions of the industries weakened in the mid-1980s, the number of newly chartered institutions peaked at 415 in 1984 (see table 1), primarily because of the conversion of uninsured state-chartered institutions to federally insured thrifts. While aggregate data portrayed an industry with a return on equity in excess of 10 percent, there were signs of trouble. Several large banks either failed or received federal assistance, and some thrifts were just beginning to recover from the effects of high interest rates earlier in the decade. As the banking and thrift crises deepened later in the 1980s and early 1990s, both the number of newly chartered entrants

Table 1

Insured Institutions

New Charters

Year	True De Novo Institutions	Remaining De Novo Institutions	Other New Institutions	Unassisted Bank Holding Company Consolidations	Unassisted Acquisitions
1980	NA	259	6	NA	222
1981	NA	235	32	NA	446
1982	NA	325	32	NA	674
1983	NA	368	40	NA	485
1984	NA	415	83	NA	396
1985	NA	386	208	118	272
1986	NA	267	162	130	253
1987	NA	220	95	265	370
1988	NA	210	107	284	389
1989	NA	176	41	220	240
1990	NA	143	55	244	209
1991	NA	77	45	276	239
1992	NA	40	41	218	290
1993	NA	52	16	181	431
1994	NA	53	16	190	468
1995	93	13	6	302	420
1996	139	11	10	243	417
1997	186	7	10	276	449

Note: NA means that a measure of true de novo institutions was not available, and all were included in remaining de novo institutions. Holding company data were not available before 1985. Holding company consolidations were defined as mergers when the two individual depository institutions had had the same bank holding company for one year or more. Unassisted acquisitions for 1984 and earlier include bank holding company consolidations.

and the number of unassisted mergers declined. In 1992, after the failure of Bank of New England and the collapse of real estate markets in New England, only 40 new institutions started operations. This was the lowest number in over a decade.

In the early stages of the financial institution crises, a number of institutions attempted to improve their performance by cutting costs or growing rapidly through mergers. This manifested itself in a significant rise in unassisted mergers in 1987 and 1988. With the recognition of the depth of the crises, and the creation and funding of the Resolution Trust Corporation in 1989, came a dramatic decline in the number of unassisted mergers to 460. As the resolution of the bank and thrift crises began to wind down in 1993 (failures had declined to 50), mergers and de novo entry began to rise. The addition of more liberalized regulations regarding both intra- and interstate banking gave the consolidation movement extra impetus. Since 1995 both industry consolidation and new charters have gained momentum, with unassisted mergers at around 700 each year and the rate of de novo entry growing by about 50 institutions each year.

Review of the Literature

Some of the early studies looked at entry in banking as a capital investment and within this framework tested for the effect of regulatory barriers (see, for example, Peltzman [1965]). However, these studies used data aggregated over a large number of local banking markets instead of analyzing individual markets. One of the limitations of this approach is that it does not allow for the examination of the effect of local market structure on the entry decision. Moreover, the demographic and potential profitability characteristics of specific markets are excluded from the analysis.

In 1971 Gilbert and Hanweck each presented a study of de novo entry at the Federal Reserve Bank of Chicago's Conference on Bank Structure and Competition.

Both papers were concerned with the issue of potential competition and with developing an empirical approach to assess the likelihood of entry by firms seeking to enter a market by merger. Both authors used cross-section data in their analyses.

Hanweck (1971), using a multiple regression model on a cross - section of 230 SMSAs for the years 1968 and 1969, attempted to explain the number of new bank formations (the dependent variable). He found that the more highly concentrated a market, the less likely there would be subsequent entry. He also found the expected profitability of the market (as measured by proxies for the expected growth in personal income or deposits) to be a significant factor in determining de novo entry. As a proxy for product differentiation barriers to entry, he included the population-to-banking office ratio and dummies for branching laws as independent variables. The insignificance of these variables led him to the conclusion that "these are not important sources of barriers to entry in local commercial banking markets."[4]

Gilbert (1974), in a subsequent article expanding on his conference paper, sought "to establish objective operational guidelines for predicting de novo expansion in bank merger cases."[5] He developed a multivariate discriminant model to distinguish between decisions of banks to open or not to open de novo branch offices in the markets in which a federal regulatory agency had denied them entry via merger. His sample was composed of 55 merger cases decided between 1960 and 1967. He tested for the significance of variables that reflected the following: the expansion capacity of an applicant bank, the expansion history of the applicant bank, the economic and demographic characteristics of the market, the growth prospects of the market (expected profits), regulations on bank expansion, and the competitive structure of the market. He found variables that represent

[4] Hanweck (1971), 168.
[5] Gilbert (1974), 151.

the economic characteristics of a market, its growth prospects for bank services, and its banking structure to be statistically significant. He also concluded: "No single factor is particularly noteworthy in explaining bank expansion behavior. However, as a category, bank market structure indicators appear to weigh most heavily in eventual decisions to branch de novo."[6] Like Hanweck, Gilbert found no significance to variables representing statutory limitations on branching.

A third study, by Rose (1977), examined the attractiveness of individual markets for de novo entry. Rose developed a model where entry is explained by market profitability, market size, market growth, per capita personal income, market concentration, and acquisitions of banks within the market. He tested his model using a sample of 20 Texas secondary SMSA banking markets over the time period 1962–73.[7] He subdivided his data into three four-year subperiods and used Tobit analysis. He found that before 1970, intermarket variations in new bank formations were difficult to explain. For the period 1970–73, he found a significant positive relationship between de novo entry and market profitability and size, and a weak negative relationship to market concentration. Because of the limited geographic scope of the sample,[8] it is difficult to generalize from the empirical results to the nation as a whole.

Economic theory has traditionally recognized that free entry into a market is a critical component of the competitive process. Amel and Liang (1997) examined "whether a competitive process limits the persistence of above-normal profits in local geographic banking markets" and whether entry into a local banking market is dependent on the profits of existing firms and on other market characteristics. While their study did

[6] Ibid., 159.
[7] To arrive at his definition of secondary market, he excludes Dallas, Fort Worth, Houston, and San Antonio. The Midland and Odessa SMSAs are also treated as one banking market.
[8] Since Texas was a unit banking state, it is uncertain as to how much the inability of banks to merge, outside of holding company acquisitions, biased the sample used.

not focus specifically on de novo entry, it provides a basic framework for examining de novo entry.

Theoretical Framework

The decision to enter a market de novo is in some ways no different from the decision to enter by acquisition or by branching. Specifically, entry decisions are based on the expectations of the profits to be earned from entry into a market. In the case of de novo entry, investors must factor in the costs of obtaining a charter and the market's receptivity to a new institution. Following Amel and Liang (1997), we assume entry is a positive function of the difference between the bank's expected profits, π^e, and entry-forestalling profits, π^f. Entry-forestalling profits are the level of economic profits below which no firm will enter a market and are a function of entry barriers and market characteristics. In the absence of barriers to entry or changes in market characteristics, entry-forestalling profits are equal to the institution's cost of capital. Higher entry barriers raise the cost of entry and thus raise π^f. These barriers can take legal form, such as restrictions on branching or policies by chartering bodies. Market characteristics can also affect π^f. For example, if the market is growing so rapidly that the existing market participants cannot meet market demand, then the benefit of increasing demand for banking services accrues to new entrants, and π^f falls.

The entry decision is expressed as

$$\mathbf{E}^* = \mathbf{0} \qquad \text{when } \pi^e < \pi^f$$

or

$$\mathbf{E}^* = \phi(\pi^e - \pi^f) \quad \text{when } \pi^e \geq \pi^f$$

where

$$\pi^e = f_1(\mathbf{B}, \mathbf{X}, \mathbf{H}, \pi, \mathbf{A})$$

$$\pi^f = f_2(\mathbf{B}, \mathbf{X}).$$

$\mathbf{E}^*$ is expected de novo entry, π^e are the profits that an institution expects to earn after entry and should be negatively related to observed entry, and π^f are entry-forestalling profits. **B** represents legal barriers to entry and should be negatively related to observed entry; **X** are exogenous market characteristics (these may be either positively or negatively related to entry). **H** is the expected future market concentration; since concentration serves as a barrier to entry, where current concentration is a proxy for future concentration one would expect a negative sign. π are pre-entry profits (higher economic profits should induce entry and expectations of higher future profits). **A** represents the opportunities for future profits resulting from customer attitudes toward out-of-territory acquirers and from merger activity within a market.

Empirical Work

The determinants of de novo entry are estimated for bank and thrift de novo entry into urban markets during calendar years 1995, 1996, and 1997. Logit analysis is used to examine Metropolitan Statistical Areas to identify those factors that determine why de novo entry occurs in some markets but not in others.[9] Besides focusing the analysis specifically on de novo entry, we also tested the hypothesis that out-of-territory acquisitions encourage de novo entry. A general form of the model tested is

$$\mathbf{E}^*_{it} = \phi(\mathbf{B}_{i,t}, \mathbf{X}_{i,t-1}, \mathbf{H}_{i,t-1}, \pi_{i,t-1}, \mathbf{A}_{i,t-1})$$

where $\mathbf{E}^*_{it}$ is de novo entry into market i in year t when $\pi^e \geq \pi^f$.

To examine the determinants of de novo entry, we specified the dependent variable as a dummy variable to indicate whether de novo entry into a market has

[9] Some MSAs were excluded from the study because they did not contain the headquarters of any bank or thrift, and others were excluded because data for certain variables were unavailable.

occurred. Markets are defined as metropolitan statistical areas (MSA). A measure for expected profitability is the past profitability of banks headquartered in the market ($\pi_{i,t-1}$).[10] As with other measures, a prospective entrant typically has access only to data that are lagged relative to the final entry decision. Hence, the proxy for expected profitability was the median return on assets for banks and thrifts for each market one year before the year of entry. A serious limitation to this approach is the assumption that the sole determinant of profit expectations of potential de novo entrants is the past profitability of firms already in the market. Moreover, it assumes that one can measure past profitability of firms competing in the market. However, published data are available only by institution and thus profits cannot be attributed to multiple markets. An alternative is to examine profit potential by seeing whether a market is over- or under-banked. Variables that capture this measure of profit potential are discussed below.

Similarly, merger activity ($\mathbf{A}_{i,t-1}$) was measured as the number of merger targets acquired in an MSA over a two-year period ending one year before the year of de novo entry. Merger activity was separated into "in-market" mergers, those between institutions in the same market, and "out-of-market" mergers, the acquisition by a bank or thrift not already represented in the market. Because a subset of in-market and out-of-market activity resulted from bank holding companies consolidating their banks, these mergers are captured separately from mergers between unaffiliated banks.

As a proxy for barriers to entry caused by market concentration ($\mathbf{H}_{i,t-1}$), a Herfindahl-Hirschman Index (HHI) was calculated for each MSA, using branch office deposit data for all banks and thrifts operating in the MSA. Following standard practice, branch data were aggregated by organizational owner, with the owner being the topmost

[10] Since economic profits are not readily available, accounting profits are used as a proxy. The use of accounting profits may bias the results because they will understate economic profits, since accounting profits are short-run measures and are managed so as to minimize tax liabilities.

institution in a chain (a bank, a thrift, or a bank holding company). Legal restrictions on branching ($\boldsymbol{B}_{i,t}$) apply to an entire state. A dummy variable, to reflect restrictions on branching for each market, was created from data provided by the Conference of State Bank Supervisors. For those MSAs that are located in more than one state, the state where the majority of banking offices are located was viewed as the one determining whether branching restrictions applied to the market.

A measure of potential demand for the services of a new bank is the population per branch of banks and thrifts. A relatively low ratio indicates that a market may be overbanked, and thus undesirable from the perspective of a potential entrant. Conversely, a relatively high ratio may indicate that there is significant opportunity for a new institution to attract customers and subsequently expand. One can view this measure as a market barrier (as did Hanweck) or as a metric for profit opportunity. Another measure of potential demand for banking services that also reflects the economic condition of the market is the ratio of per capita income per branch. This measure, especially when combined with population per branch, measures the relative wealth being served by each existing banking facility. Other measures of the relative attractiveness of a market may be captured by economic variables such as the change in the unemployment rate and the growth in population. One would expect that a market whose economy is both strengthening and growing in size would be more attractive to entrants than one that is stagnating. The one negative characteristic typically found in rapidly growing markets, however, is that commercial real estate costs are relatively higher than in slower-growing markets.[11] The high cost of real estate is a likely barrier to entry for de novo entrants, as

[11] A positive and significant relationship between population growth and office space rental rates was found for those MSAs for which data are available.

opposed to acquirers who will assume existing leases. All or some of these exogenous factors ($\mathbf{X}_{i,t-1}$) may influence a firm's decision to enter a market de novo.

To test the hypothesis that acquisitions encourage de novo entry, as well as the importance of other factors in determining de novo entry into specific geographic markets, we estimated a bivariate logit model for a pooled time-series cross-section data set. To capture any time effects over the three years studied, we included dummy variables for 1996 and 1997. Data on 322 MSAs for the three years 1995–97 were used, yielding a sample of 966 observations. Since entry decisions are typically made at least a year before a charter is granted, most of the independent variables were lagged at least a year. Each of the variables included in the various scenarios is described in table 2. The dependent variable is a dummy that equals one if the MSA had any de novo entrants during each of the years from 1995 through 1997. It should be noted that of the 449 de novo institutions reported in columns 1 and 2 of table 1, we excluded from the study 31 that were affiliates of institutions already in an MSA and 109 that were de novo entrants into rural (non-MSA) markets. To better test the hypothesis regarding merger activity and de novo entry, three equations were estimated, each containing a different measure of merger activity along with other independent variables, and maximum likelihood estimates of the coefficients were obtained. The results of the first equation are shown in column (a) of table 3. In this specification, per capita income per branch (YPPBR) and population per branch (POPPERBR) were statistically significant and positively correlated with de novo entry; population growth (POPGROW), branching restrictions (BRANCHES), and market concentration (SQSHARE) had significant negative coefficients. In this specification the variables used to represent prior merger

Table 2

Name of Variable	Description	Mean	Standard Deviation
NEWANY	De novo entry dummy variable for any bank or thrift	0.20	0.40
YPPBR	Per capita personal income per branch office	313.48	260.40
POPPERBR	Population per branch office	4227.64	4372.47
BRANCHES	Branching restriction dummy variable	0.18	0.38
LAGINA	Two-year total of in-MSA acquisitions through prior year	1.07	2.66
LAGINC	Two-year total of in-MSA consolidations through prior year	0.46	2.53
LAGOUTA	Two-year total of out-of-MSA acquisitions through prior year	0.69	0.46
LAGOUTC	Two-year total of out-of-MSA consolidations through prior year	0.34	0.70
LAGINOUT	In-MSA or out-of-MSA merger dummy variable	0.71	0.45
LAGINAD	In-MSA acquisitions dummy variable	0.38	0.49
LAGINCD	In-MSA consolidations dummy variable	0.17	0.38
LAGOUTAD	Out-of-MSA acquisitions dummy variable	0.42	0.49
LAGOUTCD	Out-of-MSA consolidations dummy variable	0.25	0.43
CHGUNEMP	Change in unemployment rate for prior year	-0.48	0.70
POPGROW	Percentage change in population for prior year	0.95	1.09
ROAONE	Median ROA of all banks and thrifts for prior year	1.07	0.33
SQSHARE	Herfindahl-Hirschman Index for midyear branches	1501.71	623.44
DUM1996	Dummy variable for the year 1996	0.33	0.47
DUM1997	Dummy variable for the year 1997	0.33	0.47

Table 3

Variable	Dependent variable: De novo entry dummy variable		
	a	b	c
Intercept	1.4291 (0.0047)***	1.1342 (0.0278)**	1.6433 (0.0018)***
YPPBR	0.00374 (0.0001)***	0.00458 (0.0001)***	0.00386 (0.0001)***
POPPERBR	0.000142 (0.0437)**	0.000094 (0.1392)	0.00012 (0.0740)*
BRANCHES	-0.5589 (0.0264)**	-0.8207 (0.0003)***	-0.6568 (0.0068)***
CHGUNEMP	-0.0596 (0.6632)	-0.0661 (0.6298)	-0.0606 (0.6607)
LAGINA	-0.0643 (0.1214)		
LAGINC	-0.0945 (0.1281)		
LAGOUTA	-0.1515 (0.0443)**		
LAGOUTC	-0.1158 (0.3385)		
LAGINOUT		-0.3387 (0.1472)	
LAGINAD			-0.3058 (0.1242)
LAGINCD			-0.4324 (0.0496)**
LAGOUTAD			-0.4188 (0.0260)**
LAGOUTCD			-0.2152 (0.2769)
POPGROW	-0.4793 (0.0001)***	-0.4547 (0.0001)***	-0.4605 (0.0001)***
ROAONE	0.2807 (0.3413)	0.3027 (0.3014)	0.2558 (0.3913)
SQSHARE	-0.00043 (0.0218)**	-0.00029 (0.1226)	-0.0004 (0.0342)**
DUM1996	-0.3179 (0.1599)	-0.3073 (0.1678)	-0.3115 (0.1655)
DUM1997	-0.5874 (0.0109)**	-0.5690 (0.0122)**	-0.5792 (0.0115)**
Number of Observations	966	966	966
Chi-square Statistic	165.677 (0.0001)***	148.087 (0.0001)***	160.925 (0.0001)***
Pseudo R-square Statistic	0.16907	0.15112	0.16422

Note: The dependent variable (NEWANY) equals one if the MSA has any de novo entrants during a year for 1995 to 1997. Statistics for the probability greater than Chi-square are in parentheses, with *, **, or *** to denote an estimate significantly different from zero at the 10%, 5%, and 1% levels of significance, respectively, using a two-tailed test.

activity were the number of in-market mergers and holding company consolidations (LAGINA and LAGINC, respectively), and the number of out-of-market mergers and consolidations (LAGOUTA and LAGOUTC, respectively), that occurred two years before the year before de novo entry. The out-of-market acquisition variable is statistically significant with a negative sign, indicating that the greater the acquisition activity, in the form of acquisitions by institutions from outside the market, the more these acquisitions serve as a deterrent to de novo entry, all other things being equal. The other variables representing consolidations and in-market mergers were statistically insignificant. Variables representing the change in unemployment (CHUNEMP) and prior-year earnings (ROAONE) were insignificant.

The finding of a significant negative relationship between market concentration and de novo entry is consistent with the findings of Hanweck (1971) and Rose (1977). The insignificance of the change in unemployment is consistent with the findings of both Gilbert (1974) and Rose (1977), while the significance of the role of population per banking office and of the branching restriction variable differs from Hanweck's findings. A possible explanation for the difference may be that Hanweck used population per banking office as a proxy for product differentiation, while it and per capita income per banking office are used here as proxies for future profitability. The finding that these variables are significant is consistent with earlier studies that found market profitability to be positively related to de novo entry. The change in the significance of branching restrictions found in this study as compared to earlier ones probably reflect changes in banking laws during the past 20 years.

The specification of the model discussed above examines the effect of the amount (or intensity) of merger activity, while the specifications in columns (b) and (c) in table 3

present the findings with variables substituted to measure the effect of the existence of prior merger activity. In the second equation (column (b)), a dummy variable representing merger activity (including holding company consolidation) over a two-year period, ending one year before the granting of a new charter, is substituted for the merger count variables in the first equation. The dummy variable, LAGINOUT, has a negative sign but is not statistically significant. This result provides further support for the finding that mergers do not encourage de novo entry. It is interesting to note that while the POPPERBR and SQSHARE variables were not significant in this specification, the branching restriction variable continued to be significant and negative.

A third specification was estimated (column (c)) with dummy variables LAGINAD, LAGOUTAD, LAGINCD, and LOGOUTCD to indicate whether there had been in-market or out-of-market mergers or holding company consolidations during the two years, ending one year before entry. The results indicate a negative and significant relationship between de novo entry and prior out-of-market mergers and in-market consolidations. The dummies representing the incidence of out-of-market consolidations and in-market mergers were insignificant. The market concentration variable was negative and significant in this specification, as was the branching restriction variable.

Many researchers have noted that during the 1980s and early 1990s it was easier to obtain a federal charter than a state charter.[12] In their study of the profitability of de novo commercial banks, DeYoung and Hasan found that de novo national banks were less efficient than their state-chartered counterparts, partly because of "differences in chartering philosophy of federal and state bank regulators."[13] We thus examine whether there is any difference in the determinants of de novo entry for federally chartered banks

[12] For a description of the OCC's shift to a market-oriented chartering policy, see White (1992), 54.

and thrifts as compared with state-chartered institutions. For the three years covered in this study (1995–97), 288 institutions were newly chartered by the states and 130 banks and thrifts received charters from federal regulators.[14] In contrast to the 1980s, when the number of new national bank charters was disproportionately greater than the number of new state charters, in the more recent period (1995–97) the number of new federal charters was about one-third of total bank and thrift charters granted. This suggests that the liberalized standards applied by federal chartering agencies during the 1980s may have been tightened, possibly as a result of the relatively higher failure rate among these institutions.

To test for differences in entry factors for state-chartered and federal-chartered de novo banks and thrifts, we divided the sample of de novo entrants by charter type. The results for federal bank and thrift de novo entry are presented in table 4, and those for state-chartered entry in table 5. The model specifications used in these tests are the same as those used in the model presented above. Each of the samples includes both MSAs with no de novo entry and either MSAs with only federal-charter de novo entry (table 4) or MSAs with only state-charter de novo entry (table 5). De Young and Hasan (1998) attribute the difference in chartering philosophy between federal and state chartering bodies to the states' reliance on the criteria of convenience and needs. State regulators were concerned not only with management competence and capital but also with whether there was a need for an additional bank in the community. Population per banking office has traditionally been used as a measure of this need; however, in the specification for nationally chartered institutions it was marginally significant; in the specification for new

[13] DeYoung and Hasan (1998), 567.
[14] These are the totals of all new charters, whereas the sample used in this study excludes de novo institutions that entered rural markets and those not considered "true" de novo banks or thrifts.

state charters it was not statistically significant. Rather, income per capita per branch was a significant positive determinant of de novo entry for both national and state-chartered institutions. However, the magnitude of the coefficient is almost twice as large, depending on the specification of the model, for state-chartered as for federally chartered entrants. This result lends some support to the view that there continues to be a difference in chartering standards between federal and state regulators.

In terms of other variables tested, branching restrictions were a deterrent to de novo entry for both national and state-chartered financial institutions. Similarly, our proxy for rental costs (POPGROW) was significant and negative for both models and across all three specifications. The variable for lagged return on assets (ROAONE) was insignificant in all specifications regardless of the charter type. The market concentration (SQSHARE) was a significant deterrent to de novo entry for national and state-chartered institutions in specification (a) and for state-chartered entrants in specification (c).

In terms of the effect of merger activity on de novo entry, in none of the specifications tested did we find that mergers or consolidations encourage entry. The only marked difference between the two groups (federal banks and thrifts and state-chartered banks and thrifts) occurred in specification (a). Using variables to reflect the number of acquisitions and consolidations, we found that both in-market and out-of-market acquisitions had a significant deterrent effect on entry by federally chartered institutions, whereas for state-chartered entrants, consolidation and merger activity was not a significant determinant of entry. The existence of merger and consolidation activity (specification (c)) showed a negative or insignificant relationship to de novo entry for both federal and state-chartered institutions.

Table 4

Variable	Dependent variable: Federal de novo entry dummy variable		
	a	b	c
Intercept	3.5754 (0.0001)***	3.0845 (0.0002)***	3.6799 (0.0001)***
YPPBR	0.00247 (0.0063)***	0.00396 (0.0001)***	0.00317 (0.0007)***
POPPERBR	0.000279 (0.0290)**	0.000176 (0.1179)	0.000229 (0.0575)*
BRANCHES	-0.8307 (0.0171)**	-1.0801 (0.0004)***	-1.0712 (0.0015)***
CHGUNEMP	0.1265 (0.5669)	0.1045 (0.6320)	0.1174 (0.5983)
LAGINA	-0.1030 (0.0495)**		
LAGINC	-0.0445 (0.5372)		
LAGOUTA	-0.3229 (0.0012)***		
LAGOUTC	-0.0519 (0.7795)		
LAGINOUT		-0.5662 (0.1255)	
LAGINAD			-0.3624 (0.2249)
LAGINCD			-0.2027 (0.5384)
LAGOUTAD			-0.8539 (0.0034)***
LAGOUTCD			-0.2323 (0.4302)
POPGROW	-0.5738 (0.0001)***	-0.5510 (0.0001)***	-0.5655 (0.0001)***
ROAONE	-0.0995 (0.8351)	-0.0808 (0.8607)	-0.1726 (0.7140)
SQSHARE	-0.00057 (0.0341)**	-0.00029 (0.2785)	-0.00041 (0.1303)
DUM1996	-0.6046 (0.0880)*	-0.6242 (0.0712)*	-0.6547 (0.0596)*
DUM1997	-0.9528 (0.0082)***	-0.9410 (0.0071)***	-0.9631 (0.0063)***
Number of Observations	842	842	842
Chi-square Statistic	98.631 (0.0001)***	76.185 (0.0001)***	86.375 (0.0001)***
Pseudo R-square Statistic	0.19679	0.15201	0.17234

Note: The dependent variable (NEWANY) equals one if the MSA has any de novo entrants during a year for 1995 to 1997. Statistics for the probability greater than Chi-square are in parentheses, with *, **, or *** to denote an estimate significantly different from zero at the 10%, 5%, and 1% level of significance, respectively, using a two-tailed test.

Table 5

Variable	Dependent variable: State de novo entry dummy variable		
	a	b	c
Intercept	1.3629 (0.0174)**	1.2471 (0.0357)*	1.7968 (0.0028)***
YPPBR	0.00529 (0.0001)***	0.00601 (0.0001)***	0.00524 (0.0001)***
POPPERBR	0.000114 (0.1500)	0.00007 (0.3358)	0.000093 (0.2212)
BRANCHES	-0.5607 (0.0532)*	-0.8825 (0.0006)***	-0.6978 (0.0119)**
CHGUNEMP	-0.0923 (0.5582)	-0.0927 (0.5592)	-0.0819 (0.6076)
LAGINA	-0.0339 (0.4469)		
LAGINC	-0.1251 (0.0689)*		
LAGOUTA	-0.0931 (0.2699)		
LAGOUTC	-0.1139 (0.4016)		
LAGINOUT		-0.3397 (0.2191)	
LAGINAD			-0.2363 (0.2956)
LAGINCD			-0.5018 (0.0403)**
LAGOUTAD			-0.4222 (0.0486)**
LAGOUTCD			-0.2180 (0.3266)
POPGROW	-0.5143 (0.0001)***	-0.4894 (0.0001)***	-0.4961 (0.0001)***
ROAONE	0.4087 (0.2251)	0.4013 (0.2339)	0.3438 (0.3177)
SQSHARE	-0.00043 (0.0472)**	-0.00031 (0.1512)	-0.00044 (0.0459)**
DUM1996	-0.3213 (0.2150)	-0.2898 (0.2418)	-0.3141 (0.2230)
DUM1997	-0.6682 (0.0104)**	-0.6632 (0.0098)***	-0.6802 (0.0089)***
Number of Observations	918	918	918
Chi-square Statistic	166.145 (0.0001)***	154.003 (0.0001)***	164.852 (0.0001)***
Pseudo R-square Statistic	0.20323	0.18539	0.20165

Note: The dependent variable (NEWANY) equals one if the MSA has any de novo entrants during a year for 1995 to 1997. Statistics for the probability greater than Chi-square are in parentheses, with *, **, or *** to denote an estimate significantly different from zero at the 10%, 5%, and 1% level of significance, respectively, using a two-tailed test.

Conclusion

This study identifies some of the determinants of de novo entry into banking markets by examining data on most of the nation's urban banking markets and differentiating between those that had *true* de novo entry and those that did not. Data for the three years from 1995 through 1997 were examined and, for the first time, banks and thrifts were viewed as full competitors. The principal hypothesis tested was one frequently mentioned in the popular press, namely, that merger activity, and in particular out-of-market acquisitions, triggers de novo entry.

Economic theory suggests that the primary impetus for de novo entry should be expected future profitability of the entrant. The results of this study indicate that the desired measure of expected future profitability for a de novo institution is whether a market is being adequately served (as opposed to what the observed past profitability of existing market participants was). The proxy variables for expected future profitability are income per capita per branch and population per branch (the latter being a traditional measure of whether a market is over- or under-banked). Of interest is the fact that the income per capita per branch variable (a variable that was not used in prior studies) was significant in all specifications of the model tested. This contrasts with the population per branch variable, which was significant in one specification, marginally significant in another, and insignificant in a third; this finding is somewhat consistent with those of Hanweck (1971) and Gilbert (1974), who found this variable not to be significant. The results on branching restrictions suggest a stronger inverse relationship between these legal constraints and de novo entry than was found in earlier studies.

The results presented above lead us to reject the hypothesis that merger activity causes de novo entry. Analysis of recent data shows a clear inverse relationship between

merger activity among market participants and de novo entry. Moreover, the existence of acquisitions by firms from outside the market was significantly related to de novo entry, and the volume of such activity was also inversely related to the de novo entry activity of federally chartered banks and thrifts. (The level of in-market merger activity, too, has a negative correlation to de novo entry by nationally chartered institutions.) Hence, not only can one reject the hypothesis that merger activity causes de novo entry, but one can conclude just the opposite, namely, that merger activity discourages de novo entry. The clear determinant of de novo entry is the attractiveness of a market in terms of likely future profitability for the entrant. Thus, ceteris paribus, increasing merger and acquisition activity likely reduces the opportunities for the required level of profits needed to encourage de novo entry.[15] While there is some evidence that the Comptroller of the Currency places less emphasis on the convenience and needs of a community in granting a charter, this does not lead to a change in the behavior of prospective entrants in response to prior merger and consolidation activity.

[15] We recognize that the attractiveness of a market also encourages merger activity. Hence, one observes markets in which both entry by merger and de novo entry occur. Nevertheless, if one takes into account the attractiveness of a market, ceteris paribus merger activity will discourage de novo entry.

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